FEASIBILITY OF REGULATING AT THE STATE LEVEL AIR EMISSIONS FROM SOURCES EMITTING PER- AND POLYFLUOROALKYL SUBSTANCES

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Background

Per- and polyfluoroalkyl substances (PFAS), a group of thousands of manmade chemicals found in many common products, such as cookware and food packaging, has gained increased attention at state and federal levels due to its persistent behavior and potential for adverse health effects. PFAS have been manufactured or used in various manufacturing processes for decades and PFAS can be found in every environmental media (water, soil, and air) in rural and urban areas. Research has shown the adverse health effects include decreased fertility; developmental effects in children; increased risk of some cancers, including prostate, kidney, and testicular cancers; reduced immune system response; interference with natural hormones in the human body; and increased risk of obesity. Regardless of the increased health effects, PFAS continue to be widely used in numerous industrial purposes. Recent PFAS contamination reports have triggered more attention on regulating PFAS, both on a national and state level. North Carolina discovered PFAS compounds, known in the chemical industry as GenX, in the Cape Fear River in June 2017, which led to an investigation and enforcement action against the facility.[1] On June 22, 2021, the U.S. Government Accountability Office (GAO) released a report on the potential contamination of drinking water from certain fire-fighting foam that contains PFAS at or near 687 Department of Defense (DOD) installations.[2] While these two examples draw attention to water contamination, emphasis on PFAS regulations for all environmental media is garnering enough attention that South Carolina needs to be prepared to either set its own air quality standard and implementing regulation or implement a federal regulation for PFAS.

[1] https://deq.nc.gov/news/key-issues/genx-investigation
[2] https://www.gao.gov/products/gao-21-421

Problem Statement

The Department of Health and Environmental Control (DHEC) Bureau of Air Quality (BAQ) is responsible for implementing federal and state standards for air pollutants, such as criteria pollutants, hazardous air pollutants, and toxic air pollutants. There are currently no federal or state (South Carolina) standards or regulations for PFAS. The feasibility of DHEC regulating air emissions from sources emitting PFAS must be determined based on the number of variables and associated costs.

Data Collection and Data Analysis

The U.S. Environmental Protection Agency (EPA) is responsible for establishing national standards for air pollutants and the associated regulations to implement those standards. BAQ adopts the standards and regulations from the EPA and has delegated authority from the EPA to implement the federal standards and regulations. BAQ has written several regulations to ensure compliance with the federal standards, using data from established scientific policies from federal or national trade associations. I spoke with two EPA staff associated with writing national standards and policies on the process to write a standard to determine if BAQ had the experience or expertise to establish a standard for an air pollutant. I started organizing ideas of what would be required by using an affinity diagram. I was able to identify four main groups of questions that would need to be addressed to determine the feasibility of writing the standard and regulation. They are as follows: legal authority, risk assessment, associated costs, and regulatory process.

- Legal Authority
    - The Department must be given legal authority by the Legislature to write a state standard or regulation
    - BAQ adopts federal standards and regulations

If there is no federal standard or regulation, DHEC would have two options for adding PFAS as a regulated pollutant, both of which require Legislative approval. The Legislature could pass a bill that would require DHEC to set a standard and write an implementing regulation to be submitted to the Legislature for approval. This scenario would likely be driven by a large-scale environmental contamination from one or more facilities. This process would take one to two years, as the bill would have to pass through both the House of Representatives and Senate to become law. Once the bill is passed, the process for DHEC to establish the standard and regulation would begin. DHEC could also initiate the process by proposing the standard and regulation, either as an addition to existing air pollution standards or on a standalone basis, pursuant to existing statutory authority, which would not require a new legislative directive. DHEC has an existing regulation for Toxic Air Pollutants that could be revised to include PFAS; however, this particular regulation does not lend itself to include PFAS as a group given the number of types of chemicals in the PFAS group. This research will focus on DHEC initiating the regulatory process to establish a standalone standard and regulation for PFAS. Legal authority is granted to DHEC by the Legislature through the South Carolina Pollution Control Act, S.C. Code Sections 48-1-10 *et seq*. (Pollution Control Act), which authorizes the Department to promulgate emission control standards and regulations.

The other option to adding a standard and regulation is incorporating a federal standard and regulation. Pursuant to the South Carolina Administrative Procedures Act (APA), S.C. Code Sections 1-23-120(H)(1), the incorporation of a federal regulation for the purpose of maintaining compliance with federal law does not require approval from the Legislature. The Pollution Control Act grants the Department the legal authority to incorporate federal emission standards and regulations. Section 112(b) of the Clean Air Act (CAA) contains a list of hazardous air pollutants. The EPA has authority to update this list as necessary and promulgate standards and the implementing federal regulations for each pollutant in that list; the regulations are codified in Title 40, Part 63 of the Code of Federal Regulations (CFR). The EPA has granted South Carolina delegation of federal regulations promulgated in 40 CFR Part 63. The Department incorporates by reference federal amendments annually to the state regulations used to implement federal requirements.

- Risk Assessment
    - There are many types of PFAS; how many types would be included
    - Technology-based standard
    - No toxicologist on staff to conduct research

According to the EPA, "[t]here are thousands of PFAS with potentially varying effects and toxicity levels, yet most studies focus on a limited number of better known PFAS compounds."[3] Therefore, DHEC would need to determine how many types of PFAS would be included in the standard. This would require extensive knowledge of PFAS and the chemical composition of the different types. Research would need to be conducted to determine the various toxicity levels of

[3] https://www.epa.gov/pfas

PFAS compounds. In addition, DHEC would have to use information collected from the industries to determine if the standard would be set for the single class of PFAS or for subgroups of PFAS compounds. Having a standard based on a single group could mean a more stringent than necessary standard for certain PFAS compounds.

The EPA sets standards for hazardous air pollutants based on technology. Technology-based standards are developed based on sources in an industry group. The standards are known as maximum achievable control technology (MACT) standards and are based on sources that are already demonstrating low emissions due to air pollution control technology used within the industry group. This is a complicated task because not enough information is known on the best technology to reduce PFAS emissions.

DHEC does not currently have a toxicologist on staff to conduct research on PFAS compounds. DHEC could outsource this research at an additional cost to the agency. One option would be to approach an academic institution to partner on the research. Academia could receive grant money to reduce the costs for DHEC. This process to partner with an academic institution, secure grant money, and conduct research would be time intensive and add to the timing of establishing a standard and regulation. It should be noted that if an academic institution has the capability of conducting the research, they may want to be involved with a national effort. While this potential could benefit South Carolina and the other states, it could limit the ability to move forward with a state-level standard and regulation.

- Associated Costs
    - Number of staff needed and the job classifications
    - Funding for additional positions
    - Outsource toxicology and science assessment
    - Long-term costs to implement

The Department has three funding sources: fee money collected from the air permitting program, state funding, and a federal grant. S.C. Code Section 48-2-50 directs the Department to charge fees for programs administered by the Department under the Clean Air Act and Pollution Control Act, including air permit fees for operating permits. The fees and the fee structure are codified in South Carolina Regulation 61-30, Environmental Protection Fees. The annual fee applicable to all permitted sources is calculated to be $25.00 per ton, plus the Consumer Price Index (CPI) adjustment, of regulated air pollutant based on actual emissions for the preceding calendar year. The CPI is based on the most recent calendar year. Sources permitted under Title V of the CAA must also pay an annual Title V program maintenance fee, which is tiered based on each source's level of actual emissions. Over the last twenty-five plus years, air pollution has significantly decreased due to federal regulations established by the CAA covering sources such as electric utility (power plants), chemical plants, pulp and paper plants, and other large and small industries. This dramatic decrease in emissions has led to a substantial decrease in annual fees collected by DHEC. BAQ also receives recurring state funds determined by the South Carolina Legislature. DHEC has requested additional state funding in recent years to assist with the shortfall of annual fees from the permitting program. The federal grant is a fraction of the annual fees and state funding, and it contains specific commitments for which the money must be utilized; therefore, it cannot be used to fund a new state standard or regulation.

The associated costs for establishing a standard and regulation would require additional staffing and long-term implementation considerations. BAQ would need to determine how many additional staff, the associated classifications of those staff, and whether the staff would be temporary and/or permanent. At a minimum, BAQ would need a toxicologist, two staff with science-based backgrounds (state job classifications of chemist II and environmental health manager III (EHM III), one staff with environmental regulation experience (state job classification of EHM III), and one attorney (state job classification of attorney III). BAQ would need to determine if it would be more beneficial to hire a toxicologist or outsource the toxicology work. For this exercise, I am using the standard budget asks of midpoints in each pay band and the job classification for an epidemiologist II because there is not a state job classification for a toxicologist. This exercise does not account for any indirect costs or one-time purchases, such as computers or office equipment.

Job Classification	Pay Band	Band Midpoint for FTE[1]	Fringe Benefit Costs[2]	Total Salary
Epidemiologist II	07	$70,674	$31,001	$101,675
Chemist II	06	$58,086	$25,479	$83,565
EHM III	07	$70,674	$31,001	$101,675
EHM III	07	$70,674	$31,001	$101,675
Attorney III	07	$70,674	$31,001	$101,675

[1]Full time equivalent
[2]Assuming 43.86% based on last budget request from the Department

The salary costs alone would be nearly $500,000, which BAQ cannot absorb due to the significant reduction in annual revenues. In addition, if the main sources of PFAS emissions are from sources subject to Title V permitting requirements, then the Department may be constrained from using state money (as opposed to Title V fees) to fund this work. Section 502(b)(3)(A) and Section 502(b)(3)(A)(iv) of the CAA clearly state “the owner or operator of all sources subject to

the requirement to obtain a permit under [Title V of the CAA must] pay an annual fee, or the equivalent over some other period, sufficient to cover all reasonable (direct and indirect) costs required to develop and administer the permit program requirements of this title, … including the reasonable costs of…preparing generally applicable regulations, or guidance."

- Regulatory Process
    - Limitations and timing of the regulatory process
    - Legally defensible standard and regulation
    - Public participation
    - Potential litigation

There are several considerations that must be addressed in the regulatory process and in evaluating whether DHEC and BAQ have the resources to respond. The regulatory process is described below in the implementation plan; however, it will be noted in the analysis that DHEC would have no more than twelve (12) months from notification of drafting a standard and regulation to submitting the final standard and regulation to Legislative Council for submission to the Legislature. DHEC would be required to have legally defensible standard and regulation, effectively requiring us to have knowledge of each type of industry in South Carolina that could potentially have PFAS emissions. While much of the described legwork could be completed before going through the regulatory process, once DHEC notices the proposed rulemaking, there is only 12 months to move it forward to the Legislature.

In addition, the standard and implementing regulation must be developed through appropriate public participation procedures. BAQ would work with a stakeholder group comprised of

representatives from each potentially interested group, including industry, environmental consultants, environmental attorneys, environmentalists, S.C. Attorney General's office, academia, and internal Departmental staff. The stakeholder group must reach a consensus on the standard and regulation; without a consensus, any of the stakeholders could testify against the standard and regulation during a hearing at the Legislature.

DHEC must be prepared for potential litigation from either industry or environmental groups. Potential issues that could lead to litigation include the standard being too strict or too lenient, whether the standard is based on a single class or subgroups, and/or identification of the correct industries included as affected sources. Affected sources could potentially argue the associated costs of compliance with the standard are too high. The sources would have to obtain additional air permits, which includes consultant and professional engineering costs, install additional air pollution control technology, and incur other operating costs, such as monitoring, recordkeeping, and reporting. One last major factor to consider for litigation is that Section 116 of the CAA prevents states from adopting a standard that is less stringent than a federal standard. If/when the EPA establishes a standard for PFAS, South Carolina would likely have to adopt the federal standard.

Implementation Plan

The next step in establishing a standard and associated regulation is the regulatory process. The process is governed by the APA, S.C. Code Sections 1-23-10 through 160. The APA was enacted to provide the public an opportunity to be involved and for legislative oversight. The South Carolina *State Register* was also established as part of the APA; documents required to be

published include notices of general public interest, notices of drafting regulations, and proposed, final, and emergency regulations. In accordance with S.C. Code Section 1-23-120(A) (unless the Department is adopting regulations to maintain compliance with federal law), a standard and regulation for an unregulated pollutant would require legislative review. This process typically takes about two years and has strict timelines to meet.

BAQ staff begin with a Notice of Drafting (NOD), which is the legal notice that DHEC is revising SC Regulation 61-62, *Air Pollution Control Regulations and Standards*. The NOD is written by BAQ staff and approved by DHEC General Counsel; it is submitted to the *State Register* for a 30-day public notice period. Following the NOD, BAQ staff would draft a proposed standard and regulation. The proposed standard and regulation would be written with input from the stakeholder workgroup to form a consensus. The proposed standard and regulation would then be reviewed by BAQ management, the office of the deputy director of Environmental Affairs for DHEC, and DHEC General Counsel. The proposed standard and regulation would be presented to the S.C. Board of Health and Environmental Control (Board). If granted approval by the Board, DHEC staff would submit the proposed standard and regulation to the *State Register* for a 30-day public notice period. BAQ staff would consider and address timely received public comments as the final standard and regulation are prepared for a public hearing. BAQ staff would hold a public hearing in front of the Board. Any additional comments received would be considered and addressed.

BAQ staff would request that the Board grant a finding of need and reasonableness of the standard and regulation to proceed to submit it to the Legislature. The need and reasonableness

of the regulation is to be determined by the Department based upon an analysis of the factors listed in Section 1-23-115(C)(1) through (11) of the APA, which address "the effects of the proposed regulation on the public health and environmental welfare of the community and State and the effects of the economic activities arising out of the proposed regulation." DHEC would need to explain that PFAS is detrimental to human health and the environment and that by not adopting the standard and regulation, both could be compromised. DHEC would also have to describe the costs to South Carolina, DHEC, and the regulated community as part of the fiscal impact statement and determination of costs and benefits. DHEC would incur considerable costs with this regulation through the process of establishing the standard, and likely the ongoing implementation, through air permitting, inspections, testing, and enforcement. As described above, affected sources would also incur considerable costs in complying with the standard and regulation.

Evaluation Method

The process described above is not impossible but would be a lengthy and expensive process. PFAS is becoming a major concern nationally and in all environmental media: water, air, and land and waste. The EPA is aware of the impacts of pollution resulting from PFAS emissions and has set a path forward.[4] Air emissions are likely the last of the environmental media to be addressed. South Carolina could get ahead of the EPA and establish a standard and regulation to prevent further damage to human health and the environment. Hurdles exist in that DHEC does not currently have the appropriate staffing nor funding to move forward. In addition, many

[4] https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf

industries have more than one location within the United States. Each state has different state-level environmental permitting and compliance requirements, which could result in affected sources being required to incur additional costs of compliance in South Carolina. The affected sources could choose to close their facilities in South Carolina, which would affect the overall economy for the state.

The EPA has the resources to collect the emissions data from facilities across the country and establish a standard based on commonalities between types of industries and available air pollution control technology. Once a federal standard and regulation are promulgated, DHEC would incorporate by reference the federal standard and regulation. This process is significantly less complicated and would use existing DHEC resources rather than adding staffing or other additional costs. The regulatory process is described above and DHEC would only have to go as far as a final hearing in front of the Board and requesting a finding of need and reasonableness for it to become an effective state regulation. BAQ has existing staffing that executes this annual regulatory process and there is existing BAQ staff to implement the federal standard and regulation. There could be some potential for additional workload as additional air permits may be required, but the costs could potentially be absorbed in the existing budget.

Summary and Recommendations

South Carolina should wait for the EPA to establish a national standard and implementing regulation. The EPA will be able to conduct the most comprehensive level of research to determine the best path forward in determining how to establish an equitable standard for the

various industries that have PFAS emissions. This would mean all states would have the same standard and regulation to meet, equalizing the requirements for compliance. DHEC does not have the funding or staffing resources to research PFAS at the necessary level to establish a standard and regulation. The state and DHEC will save money by waiting for the EPA to establish a federal standard and regulation that can be adopted by South Carolina.